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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/532,830

04/26/2005

Hiroshi Shimada

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EXAMINER

CHONG, DAVID W

ART UNIT

PAPER NUMBER

1797

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/532,830	Applicant(s) SHIMADA ET AL.	
	Examiner DAVID CHONG	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/26/05, 9/13/05, 11/03/05, 5/25/06, 10/06/06,</u> | 6) <input type="checkbox"/> Other: _____ |
| <u>3/06/07.</u> | |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 23, 28 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. US 2003/0032188.

5. Regarding claim 23 and 32, Bailey teaches a method for managing a denitration catalyst, the method for managing a plurality of denitration catalysts in an exhaust-gas denitration system [0008] the method comprising: measuring a performance of the denitration catalysts separately for each of the denitration catalysts ([0007] lines 3-4); and determining which process is to be performed, regeneration of the denitration catalysts [0032], or replacement of the denitration catalysts ([0005] lines 13-14) which is the addition of a new catalyst. Bailey is silent as to performing neither replacement nor regeneration for each of the denitration catalysts. At the time of the invention it would have been obvious to a person of ordinary skill in the art to perform neither replacement nor regeneration if the catalysts were performing adequately.

6. Regarding claim 28, Bailey teaches checking an exhaust gas at an inlet and an outlet of each of the denitration catalysts in a daily management for the denitration catalysts [0007].

7. Claims 24, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. US 2003/0032188 in view of Wakamoto US 6,199,372.

8. Regarding claim 24, Bailey teaches the elements of claim 23. Bailey is silent as to wherein the regeneration process includes a plurality of types of regeneration processes, and selecting an optimum type from among the types of the regeneration processes. Wakamoto teaches an apparatus and method for regenerating a NO_x catalyst which includes a plurality of types of regeneration processes (col. 3 lines 18-

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47), the determining includes selecting an optimum type from among the types of the regeneration processes (col. 5 lines 31-43). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a plurality of types of regeneration processes and determine an optimum type in the invention of Bailey in order to restore the performance of the NOx catalyst in a minimal time (Wakamoto, col. 5 lines 50-52).

9. Regarding claims 35 and 36, Bailey teaches a method for managing a denitration catalyst, the method for managing a plurality of denitration catalysts in an exhaust-gas denitration system [0008] the method comprising: measuring a performance of the denitration catalysts separately for each of the denitration catalysts ([0007] lines 3-4). Bailey is silent as to determining an execution timing for regeneration of the denitration catalysts and for replacement of the denitration catalysts, for each of the denitration catalysts based on the performance. Wakamoto teaches an apparatus and method for regenerating a NOx catalyst and determining execution timing (col. 4 lines 37-40) for regeneration of the denitration catalyst. At the time of the invention it would have been obvious to a person of ordinary skill in the art to determine an execution timing for regeneration, replacement or addition of catalysts in order to maintain the performance of the catalysts.

10. Regarding claim 37, Bailey teaches checking an exhaust gas at an inlet and an outlet of each of the denitration catalysts in a daily management for the denitration catalysts [0007].

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11. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. US 2003/0032188 in view of Wakamoto US 6,199,372 further in view of Inatsune et al. US 4,726,935.

12. Regarding claim 38, Bailey/Wakamoto teaches the elements of claim 35. They are silent as to a periodic maintenance for the denitration catalysts, extracting a sample of each of the denitration catalysts, and measuring a performance of the sample.

Inatsune teaches an apparatus for removing NO_x which includes a periodic maintenance for the denitration catalysts (col. 3 lines 50-51) and extracting a sample of each of the denitration catalysts, and measuring performance of the sample (col. 3 lines 54-62). At the time of the invention it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Inatsune into the teaching of Bailey in order to monitor the deterioration of the catalysts in the denitration system.

13. Claims 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. US 2003/0032188 in view of Wakamoto US 6,199,372 further in view of Morii et al. US 4,925,640.

14. Regarding claim 25, Bailey teaches it is conventional to replace, when it is determined to perform the replacement, one of the denitration catalysts [0005]. Bailey does not teach replacing the catalyst with one that has been used in another exhaust-gas denitration system and that has undergone regeneration. Morri teaches a method for the denitration of exhaust gas using catalysts and teaches that replacing catalyst can lead to an increase in costs and regenerating catalysts is more economical. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to

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replace catalysts with one that has been used in another exhaust gas denitration system and that has undergone regeneration since this would be a more cost effective way to maintain performance of the denitration system.

15. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. US 2003/0032188 in view of Morii et al. US 4,925,640.

16. Regarding claims 26 and 27, Bailey teaches the elements of claim 23. Bailey is silent as to determining a charge amount to be collected, when it is determined to perform the regeneration, by acquiring an amount of money at a predetermined ratio to an amount of a difference between a cost required for the replacement and a cost required for the regeneration or based on a cost required for installation and management of the denitration catalysts. Morri teaches a method for the denitration of exhaust gas using catalysts and teaches that replacing catalyst can lead to an increase in costs and regenerating catalysts is more economical. At the time of the invention it would have been obvious to a person of ordinary skill in the art to determine a charge amount to be collected by acquiring an amount of money at a predetermined ratio between a cost required for replacement and regeneration or based on a cost required for installation and management since replacement of catalyst would be costly (Morri, col. 1 lines 58-60) and regenerating catalyst is a more economical means (Morii, col. 2 lines 14-15).

17. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. US 2003/0032188 in view of Inatsune et al. US 4,726,935.

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18. Regarding claim 29, Bailey teaches the elements of claim 23. Bailey is silent as to a periodic maintenance for the denitration catalysts, extracting a sample of each of the denitration catalysts, and measuring a performance of the sample. Inatsune teaches an apparatus for removing NO_x which includes a periodic maintenance for the denitration catalysts (col. 3 lines 50-51) and extracting a sample of each of the denitration catalysts, and measuring performance of the sample (col. 3 lines 54-62). At the time of the invention it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Inatsune into the teaching of Bailey in order to monitor the deterioration of the catalysts in the denitration system.

19. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. US 2003/0032188 in view of Lee et al. US 4,661,468.

20. Regarding claims 30 and 31, Bailey teaches the elements of claim 23 but is silent as to determining a shape of denitration catalyst to be replaced or regenerated. Lee teaches a catalyst used to remove NO_x and teaches that shape of the catalysts have an effect on the catalysts ability (col. 3 lines 9-11). At the time of the invention it would have been obvious to a person of ordinary skill in the art to determine a shape of a denitration catalyst to be regenerated or replaced since it is known that a catalysts shape is important to its performance.

21. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. US 2003/0032188 in view of Richardson et al. US 6,258,981

22. Regarding claim 33, Bailey teaches the elements of claim 32. Bailey does not teach adding a denitration catalyst that has been used in another exhaust-gas

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denitration system and that has undergone regeneration. Richardson teaches that it is conventional to add a catalyst that has been used in another exhaust gas denitration system (recycled. col. 2 lines 49-50) for cost considerations. At the time of the invention it would have been obvious to a person of ordinary skill in the art to add catalyst that had been used in another exhaust gas denitration system and that has undergone regeneration in order to save costs in using new catalyst.

23. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. US 2003/0032188 in view of Richardson et al. US 6,258,981 further in view of Lee et al. US 4,661,468.

24. Regarding claim 34, Bailey/Richardson teach the elements of claim 33. They do not teach altering a shape of a denitration catalyst to be added. Lee teaches a catalyst used to remove NO_x and teaches that shape of the catalysts have an effect on the catalysts ability (col. 3 lines 9-11). At the time of the invention it would have been obvious to a person of ordinary skill in the art to determine a shape of a denitration catalyst to be added since it is known that a catalysts shape is important to its performance.

25. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Griffin US 5,896,743 in view of Wakamoto US 6,199,372.

26. Regarding claim 39, Griffin teaches a method for managing a denitration catalyst, the method for managing a plurality of denitration catalysts in an exhaust gas denitration system (col. 1 lines 50-52), the method comprising: predicting performance of each of the denitration catalysts (col. 1 lines 8-9) based on information on a scale and a total

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time of operation (light off time compared to a predetermined value, Abstract) of the exhaust gas denitration system and replacement or addition of a new denitration catalyst based on the performance (col. 4 lines 58-60). Griffin is silent as to determining execution timing for regeneration of the denitration catalysts. Wakamoto teaches an apparatus and method for regenerating a NO_x catalyst and determining execution timing (col. 4 lines 37-40) for regeneration of the denitration catalyst. At the time of the invention it would have been obvious to a person of ordinary skill in the art to determine an execution timing for regeneration of catalysts in order to maintain the performance of the catalysts.

27. Claims 40-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffin US 5,896,743 in view of Bailey et al. US 2003/0032188.

28. Regarding claims 40 and 41, Griffin teaches an apparatus for managing a denitration catalyst that manages a plurality of denitration catalysts in an exhaust gas denitration system that includes a measuring device (catalyst monitor, col. 4 lines 22-25), the apparatus comprising: a receiving unit (microprocessor, col. 4 lines 43-44) capable of receiving information on performance of each of the denitration catalysts and capable of being measured by the measuring device through a network; a storage unit that stores the information (col. 4 lines 45-51) and a determining unit that determines when replacement is to be performed (col. 4 lines 52-60) which reads on an addition of a new denitration catalyst, based on the information in the storage unit. Griffin is silent as to determining when regeneration of the denitration catalysts is to be performed. Bailey teaches an apparatus for managing a denitration catalyst (catalyst performance

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diagnostics system [0007]) comprising a determining unit that determines when regeneration should be performed ([0020]). At the time of the invention it would have been obvious to a person of ordinary skill in the art to include in the determining unit when regeneration should be performed in order to maintain the performance of the catalyst.

29. Regarding claims 42 and 43, Griffin teaches an apparatus for managing a denitration catalyst that manages a plurality of denitration catalysts in an exhaust gas denitration system that includes a measuring device (catalyst monitor, col. 4 lines 22-25), the apparatus comprising: a receiving unit (microprocessor, col. 4 lines 43-44) capable of receiving information on performance of each of the denitration catalysts and capable of being measured by the measuring device through a network; a storage unit that stores the information (col. 4 lines 45-51) and a determining unit that determines execution timing for replacement to be performed (col. 4 lines 52-60) based on the information in the storage unit. Griffin is silent as to a determining unit that determines when regeneration of the denitration catalysts is to be performed. Bailey teaches an apparatus for managing a denitration catalyst (catalyst performance diagnostics system [0007]) comprising a determining unit that determines when regeneration should be performed ([0020]). At the time of the invention it would have been obvious to a person of ordinary skill in the art to include in the determining unit when regeneration should be performed in order to maintain the performance of the catalyst.

30. Regarding claim 44, Griffin teaches an apparatus for managing a denitration catalyst that manages a plurality of denitration catalysts in an exhaust gas denitration

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system, the apparatus comprising: a storage unit (col. 4 lines 45-51) capable of storing information on performance of a plurality of denitration catalysts in a second exhaust gas denitration system and information on execution timing for regeneration of the denitration catalysts, for replacement of the denitration catalysts, and for addition of a new denitration catalyst that are determined based on the information on the performance of the denitration catalysts in the second exhaust gas denitration system; a receiving unit (microprocessor, col. 4 lines 43-44) capable of receiving information on a scale and a total time of operation of the first exhaust gas denitration system (col. 4 lines 48-51); A predicting unit (third comparator, col. 1 lines 65-67) that is capable of predicting performance of each of the denitration catalysts in the first exhaust gas denitration system based on the information received and the information in the storage unit. Griffin is silent as to a determining unit that determines when regeneration of the denitration catalysts is to be performed. Bailey teaches an apparatus for managing a denitration catalyst (catalyst performance diagnostics system, [0007]) comprising a determining unit that determines when regeneration should be performed ([0020]). At the time of the invention it would have been obvious to a person of ordinary skill in the art to include in the determining unit when regeneration should be performed in order to maintain the performance of the catalyst.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID CHONG whose telephone number is (571)270-

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3718. The examiner can normally be reached on Monday through Friday, 7:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DC/

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797